EPA Region 7 TMDL Review

TMDL ID	230	*Water Body ID*	LP2-L0040
Water Body Name	Holmes Lake		
Pollutant	Nutrients		
Tributary	Antelope Creek		
State	NE *HUC*	10200203	
Basin	Missouri/Lower Platte		
Submittal Date	06/26/2003		
Approved	yes		

Submittal Letter

State submittal letter indicates final TMDL(s) for specific pollutant(s)/ water(s) were adopted by the state, and submitted to EPA for approval under section 303(d) of the Clean Water Act.

Letter and package dated 6/26/03 received 6/30/03.

Water Quality Standards Attainment

The water body's loading capacity for the applicable pollutant is identified and the rationale for the method used to establish the cause-and-effect relationship between the numeric target and the identified pollutant sources is described. TMDL and associated allocations are set at levels adequate to result in attainment of applicable water quality standards.

Nebraska's aesthetics beneficial use is identified as not attained due to excessive nutrients causing a hypereutrophic condition in the lake. Nebraska does not have numeric criteria for nutrients, however, apply the Carlson's trophic state index (TSI) as an assessment tool for determining beneficial use attainment in lakes. Beneficial uses are considered to be in attainment when 2 of 3 TSI parameters (secchi depth, phosphorus and chlorophyll-a (chl-a)) are less than 60 with an overall mean not to exceed 60. The targeted in-lake water quality conditions resulting from the identified allocations will result in the lake fully supporting the aesthetic beneficial use.

Numeric Target(s)

Submittal describes applicable water quality standards, including beneficial uses, applicable numeric and/or narrative criteria. If the TMDL is based on a target other than a numeric water quality criterion, then a numeric expression, site specific if possible, was developed from a narrative criterion and a description of the process used to derive the target is included in the submittal.

All beneficial uses are described as well as the applicable narrative criteria. The TMDL is based on narrative criteria for aesthetics which is translated to a numeric transparency water quality target through the use of targeted TSI scores and modeling. The lake's current phosphorus load and loading capacity was determined through the use of the EUTROMOD watershed and lake modeling spreadsheet. Phosphorus was selected as the nutrient/parameter of concern because past monitoring has indicated eastern Nebraska lakes to be phosphorus limited and as well as TSI scores also giving that indication.

Link Between Numeric Target(s) and Pollutant(s) of concern

An explanation and analytical basis for expressing the TMDL through surrogate measures (e.g., parameters such as percent fines and turbidity for sediment impairments, or chlorophyll-a and phosphorus loadings for excess algae) is provided, if applicable. For each identified pollutant, the submittal describes analytical basis for conclusions, allocations and margin of safety that do not exceed the load capacity.

In-lake conditions indicate accelerated eutrophication/algal growth caused by excessive nutrient loading; this linkage has accelerated eutrophication and water quality impairments has been repeatedly documented. The EUTROMOD model was used to estimate annual phosphorus loads from the watershed and in-lake monitoring data was used to calibrate the EUTROMOD model, define the loading capacity, current load and the in-lake response predictions. The loading capacity is identified as 260 pounds/year phosphorus; a 97.25% reduction in the current load (8,070 pounds/year) is necessary to meet the load capacity and ultimately achieve water quality standards attainment. Stakeholder involvement resulted in a transparency target of 30 inches of visibiliy. This target results in a more stringent goal for the phosphorus and chlorophyll endpoints rather than 2 of the 3 TSI scores better than 60.

Source Analysis

Important assumptions made in developing the TMDL, such as assumed distribution of land use in the watershed, population characteristics, wildlife resources, and other relevant information affecting the characterization of the pollutant of concern and its allocation to sources, are described. Point, non point and background sources of pollutants of concern are described, including magnitude and location of the sources. Submittal demonstrates all significant sources have been considered.

There are no wastewater treatment plants currently the watershed, the City of Lincoln does however have stormwater discharge regulated under NPDES. The watershed is transitioning from agriculture to urban and the City maintains a park around the lake. Nonpoint sources include stormwater discharges not covered by NPDES permits and other agricultural, urban, and rural run-off.

Allocation

Submittal identifies appropriate wasteload allocations for point, and load allocations for nonpoint sources. If no point sources are present the wasteload allocation is zero. If no nonpoint sources are present, the load allocation is zero.

Allocation is set at net lake TP loading of 260 pounds per year.

WLA Comment

The WLA recognizes the transitional nature of the watershed and provide the WLAs as formula based on the land area covered under the most current NPDES stormwater permit. Actual permitting language in the August 14, 2002 permit provides for BMP implementation and for a monitoring program to assess the effectiveness.

LA Comment

The LA is identified as the difference between the 280 pounds per year and the WLA and is shown in a table for various buildouts of the watershed.

Margin of Safety

Submittal describes explicit and/or implicit margin of safety for each pollutant. If the MOS is implicit, the conservative assumptions in the analysis for the MOS are described. If the MOS is explicit, the loadings set aside for the MOS are identified and a rationale for selecting the value for the MOS is provided.

The MOS is implicit based on the assumption that all phosphorus delivered is maintained in the lake and available for algae production rather than any losses occurring through the outlet of the lake.

Seasonal Variation and Critical Conditions

Submittal describes the method for accounting for seasonal variation and critical conditions in the TMDL(s).

An annual loading period was used in modeling the lake assimilative capacity and for estimating the loading reduction necessary to meet in-lake water quality targets.

Public Participation

Submital describes public notice and public comment opportunity, and explains how the public comments were considered in the final TMDL(s).

The draft TMDL was announced through a public notice in the Lincoln Journal Star Newspaper and the Omaha World Hearld with just over a 30-day comment period provided. The TMDL was also made available on the NDEQ website and announcement letters were mailed to identified stakeholders. Response to public comment were provide to EPA.

Monitoring Plan for TMDL(s) Under Phased Approach

The TMDL identifies the monitoring plan that describes the additional data to be collected to determine if the load reductions required by the TMDL lead to attainment of WQS, and a schedule for considering revisions to the TMDL(s) (where phased approach is used).

The USACE has agreed to conduct monthly monitoring throughout the growing season and forward the results to NDEQ for assessment. The USACE will also conduct periodic bathymetric surveys. NDEQ may also periodically conduct monitoring to evaluate the effectiveness of BMPs. The MS4 permit has monitoring provision to be undertaken by the permittee.

Reasonable assurance

Reasonable assurance only applies when reduction in nonpoint source loading is required to meet the prescribed waste load allocations.

Through the general and MS4 permits, BMP requirements should provide for achieving WQS in the future. In addition, Nebraska has identified several Federal, State, local, and non-government organizations that may be included in the implementation process. The monitoring network as a part of the permit should provide feedback as to which BMPs are working and guide in selection of future practices.

EPA Region 7 TMDL Review

TMDL ID	229	*Water Body ID*	LP2-L0040
Water Body Name	Holmes Lake		
Pollutant	Siltation/Sedimentation		
Tributary	Antelope Creek		
State	NE *HUC*	10200203	
Basin	Missouri/Lower Platte		
Submittal Date	06/30/2003		
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State submittal letter indicates final TMDL(s) for specific pollutant(s)/ water(s) were adopted by the state, and submitted to EPA for approval under section 303(d) of the Clean Water Act.

Letter and package dated 6/26/2003 received 6/30/2003.

Water Quality Standards Attainment

The water body's loading capacity for the applicable pollutant is identified and the rationale for the method used to establish the cause-and-effect relationship between the numeric target and the identified pollutant sources is described. TMDL and associated allocations are set at levels adequate to result in attainment of applicable water quality standards.

Nebraska's Aquatic Life-Warmwater Class A and Aesthetics beneficial uses are identified as not attained due to excessive sedimentation. Nebraska does not have numeric criteria for sediment or total suspended solids but NDEQ has adopted methods to evaluate the severity of sedimentation in reservoirs using volume loss as an indicator. Beneficial uses are considered to be in attainment when the amount of annual volume loss/sedimentation in a lake or reservoir is less than 0.5%. The loading capacity is identified as 5,000 tons/year; a 53% reduction in the current load (10,574 tons/year) is necessary to meet the load capacity and associated volume loss indicative of water quality standards (WQS) attainment.

Numeric Target(s)

Submittal describes applicable water quality standards, including beneficial uses, applicable numeric and/or narrative criteria. If the TMDL is based on a target other than a numeric water quality criterion, then a numeric expression, site specific if possible, was developed from a narrative criterion and a description of the process used to derive the target is included in the submittal.

All beneficial uses are described as well as the applicable narrative criteria. The TMDL is based on narrative criteria translated to a numeric water quality target. Annual volume loss targets in comparison with current sediment load estimates allowed for the determination of the desired endpoint and the associated degree of sediment load reduction needed to attain beneficial uses. The lake's current sediment load and loading capacity was determined through the use of bathymetric survey data.

Link Between Numeric Target(s) and Pollutant(s) of concern

An explanation and analytical basis for expressing the TMDL through surrogate measures (e.g., parameters such as percent fines and turbidity for sediment impairments, or chlorophyll-a and phosphorus loadings for excess algae) is provided, if applicable. For each identified pollutant, the submittal describes analytical basis for conclusions, allocations and margin of safety that do not exceed the load capacity.

The lake was identified on the 2002 303(d) list as impaired because of the severity of the sedimentation rate occurring in the lake's multi-purpose pool. Therefore, the targeted endpoint is translated as the amount of sediment the lake can receive on an annual basis and still meet an average annual multi-purpose pool loading rate of <0.5%. In order to reach the goal of 0.34% volume loss/year, 5,574 tons/year of sediment needs to be reduced.

Source Analysis

Important assumptions made in developing the TMDL, such as assumed distribution of land use in the watershed, population characteristics, wildlife resources, and other relevant information affecting the characterization of the pollutant of concern and its allocation to sources, are described. Point, non point and background sources of pollutants of concern are described, including magnitude and location of the sources. Submittal demonstrates all significant sources have been considered.

There are no wastewater treatment plants currently the watershed, the City of Lincoln does however have stormwater discharge regulated under NPDES. The watershed is transitioning from agriculture to urban and the City maintains a park around the lake. Nonpoint sources include stormwater discharges not covered by NPDES permits and other agricultural, urban, and rural run-off.

Allocation

Submittal identifies appropriate wasteload allocations for point, and load allocations for nonpoint sources. If no point sources are present the wasteload allocation is zero. If no nonpoint sources are present, the load allocation is zero.

Allocation is set at net lake loading of 5,000 tons per year

WLA Comment

The WLA recognizes the transitional nature of the watershed and provide the WLAs as formula based on the land area covered under the most current NPDES stormwater permit. Actual permitting language in the August 14, 2002 permit provides for BMP implementation and for a monitoring program to assess the effectiveness.

LA Comment

The LA is identified as the difference between the 5,000 tons per year and the WLA and is shown in a table for various buildouts of the watershed.

Margin of Safety

Submittal describes explicit and/or implicit margin of safety for each pollutant. If the MOS is implicit, the conservative assumptions in the analysis for the MOS are described. If the MOS is explicit, the loadings set aside for the MOS are identified and a rationale for selecting the value for the MOS is provided.

The MOS is implicit based on conservative assumptions (worst case scenarios) used in the modeling of sediment loads, and the assumption that all sediment delivered is deposited in the multi-purpose pool rather than any losses occurring through the outlet of the lake. Also a target of .34% sedimentation rate is well below the state level of concern of .75%. Although not directly related to the TMDL target, nonetheless a waterbody restortation plan is in conceptual planning and identifies a dredging of the lake and other physical improvements; this will enhance the waterbody's overall water quality.

Seasonal Variation and Critical Conditions

Submittal describes the method for accounting for seasonal variation and critical conditions in the TMDL(s).

There are no specific critical conditions associated with this TMDL because once sediment settles in the lake, it is assumed to have an infinite residence time and is present on a year round basis.

Public Participation

Submital describes public notice and public comment opportunity, and explains how the public comments were considered in the final TMDL(s).

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bathymetric surveys. NDEQ may also periodically conduct monitoring to evaluate the effectiveness of BMPs. The MS4 permit has monitoring provision to be undertaken by the permittee.

Reasonable assurance

Reasonable assurance only applies when reduction in nonpoint source loading is required to meet the prescribed waste load allocations.

Through the general and MS4 permits, BMP requirements should provide for achieving WQS in the future. In addition, Nebraska has identified several Federal, State, local, and non-government organizations that may be included in the implementation process. The monitoring network as a part of the permit should provide feedback as to which BMPs are working and guide in selection of future practices.